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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/098,524	03/18/2002	Ji Suk Hong	P67503US0	6250

136 7590 03/04/2004
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EXAMINER

GARCIA, JOANNIE A

ART UNIT PAPER NUMBER

2823

DATE MAILED: 03/04/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 10/098,524	Applicant(s) HONG ET AL.	
	Examiner Joannie A Garcia	Art Unit 2823	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 11 December 2003.
- 2a) ☒ This action is FINAL. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-10 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-10 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

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The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

Claims 1-10 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

The term "predetermined" in claim 1 is a relative term, which renders the claim indefinite. The term "predetermined" is not defined by the claim, the specification does not provide a standard for ascertaining the requisite degree, and one of ordinary skill in the art would not be reasonably apprised of the scope of the invention. If applicant intends a particular STI and DTI region, it should be clearly recited.

Claims 9 and 10 recite the limitation "surface of the semiconductor substrate" in line 2. There is insufficient antecedent basis for this limitation in the claim.

Claims 1-10 are rejected under 35 U.S.C. 103(a) as being unpatentable over applicant's admitted prior art, in combination with Ko et al'683 (US 2003/0003683), and Koh et al'832 (US 2002/0090832).

The rejection is maintained as stated in the Office Action mailed 12-03-03, and as stated below.

Applicant argues that Ko et al'683 does not teach implantation of argon ions to cure a photoresist. However, Ko et al'683 is not relied upon for that purpose. Ko et al'683 is relied upon for disclosing formation of an insulating layer 118 on semiconductor substrate 122

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(Figure 2), forming a photoresist 116/110 covering insulating layer 118 (Figure 2), and curing a surface the photoresist with argon gas (Figure 3, and Paragraph 0032, lines 7-13), converting a portion of the photoresist to a hardened layer (Abstract, and Paragraph 0032, lines 15-20). Koh et al'832 is relied upon for disclosing a curing process employing an argon ion implantation process, and an e-beam curing process (Abstract, Paragraph 0027, and Paragraph 0028, lines 3-5), therefore, achieving formation of a cured hardened photoresist, by employing the disclosed curing ion implantation/e-beam process of Koh et al'832 in the cured photoresist 116/110 formation step of Ko et al'683.

Applicant argues that Koh et al does not teach the use of argon ion implantation or e-beam processing to cure the photoresist such that the resulting cured photoresist is sufficient, with only the second insulating layer, to be used as a mask in a later etching process. However, Koh et al'832 is not relied upon for that purpose. Koh et al'832 is relied upon for disclosing a curing process employing an argon ion implantation process at an energy of 20 KeV (Abstract, Paragraph 0027, and Paragraph 0028, lines 1-3) and an e-beam curing process (Abstract, Paragraph 0027, and Paragraph 0028, lines 3-5). Ko et al'683 is relied for disclosing formation of a photoresist 116/110 covering insulating layer 118 (Figure 2), and curing a surface the photoresist with argon gas (Figure 3, and Paragraph 0032, lines 7-13), converting a portion of the photoresist to a hardened layer (Abstract, and Paragraph 0032, lines 15-20), therefore, achieving formation of a cured hardened photoresist, by employing the disclosed curing ion implantation/e-beam process of Koh et al'832 in the cured photoresist 116/110 formation step of Ko et al'683.

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THIS ACTION IS MADE FINAL. Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the mailing date of this final action.

Any inquiry of a general nature or relating to the status of this application should be directed to the Group Receptionist whose telephone number is (703) 308-0956 until 2/4/04. See MPEP 203.08.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to examiner Joannie Adelle García whose telephone number is (571) 272-1861. The examiner can normally be reached on Monday through Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Olik Chaudhuri, can be reached on (571) 272-1855. The fax number for this group is 703-872-9306 for before final submissions, 703-872-9306 for after final submissions and the

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customer service number for group 2800 is (703) 872-9317. Updates can be found at

<http://www.uspto.gov/web/info/2800.htm>.



JAG

January 9, 2004

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Primary Examiner
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Primary Examiner
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